

ADJUSTABLE DISPLAY MOUNTING

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application Ser. No. 61/509,826 filed Jul. 20, 2011, the contents of which are hereby incorporated by reference.

BACKGROUND

[0002] Wearable systems can integrate various elements, such as miniaturized computers, input devices, sensors, detectors, image displays, wireless communication devices as well as image and audio processors, into a device that can be worn by a user. Such devices provide a mobile and light-weight solution to communicating, computing and interacting with one's environment. With the advance of technologies associated with wearable systems and miniaturized optical elements, it has become possible to consider wearable compact optical displays that augment the wearer's experience of the real world.

[0003] By placing an image display element close to the wearer's eye(s), an artificial image can be made to overlay the wearer's view of the real world. Such image display elements are incorporated into systems also referred to as "near-eye displays", "head-mounted displays" (HMDs) or "heads-up displays" (HUDs). Depending upon the size of the display element and the distance to the wearer's eye, the artificial image may fill or nearly fill the wearer's field of view.

SUMMARY

[0004] In a first aspect, a head-mounted display is provided. The head-mounted display includes a head-mounted support and a display device. The display device has an aperture through which an image is viewable along a viewing axis from a viewing point. A support mount is on the head-mounted support. The support mount includes an adjustment surface. A display mount is on the display device. The display device is magnetically attached to the support mount such that the display mount is slidably adjustable on the adjustment surface through an adjustment range that moves the aperture of the display device along an arc. The arc is centered on the viewing point and the viewing axis extends between the aperture and the viewing point throughout the adjustment range.

[0005] In a second aspect, a head-mounted display is provided. The head-mounted display includes a head-mounted support and a display device. The display device has an aperture through which an image is viewable along a viewing axis from a viewing point. A support mount is on the head-mounted support. The support mount includes an adjustment surface. A display mount is on the display device. The display mount is magnetically attachable to the adjustment surface in a plurality of discrete mounting positions. Each of the discrete mounting positions corresponds to a respective position of the aperture of the display device along an arc. The arc is centered on the viewing point and the viewing axis extends between the aperture and the viewing point for each of the discrete mounting positions.

[0006] In a third aspect, a head-mounted display is provided. The head-mounted display includes a head-mounted support and a display device. The display device has an aperture through which an image is viewable along a viewing axis. A support mount is on the head-mounted support. A display mount is on the display device. The display device includes a

convex mounting surface that has a plurality of facets. The display mount is magnetically attachable to the support mount in a plurality of discrete mounting orientations defined by the plurality of facets. Each of the discrete mounting orientations corresponds to a respective orientation of the viewing axis.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is a top view of a head-mounted display in accordance with an example embodiment.

[0008] FIG. 2 is a side view of the head-mounted display of FIG. 1 in accordance with an example embodiment.

[0009] FIG. 3A is a front view and FIG. 3B is a side cutaway of a faceted support mount and a corresponding display mount in accordance with an example embodiment.

[0010] FIG. 4 is a side cutaway view of a curved support mount and a corresponding display mount in accordance with an example embodiment.

[0011] FIG. 5 is a side cutaway view of a sawtooth-textured support mount and a corresponding display mount in accordance with an example embodiment.

[0012] FIG. 6 is a front view of a head-mounted display with support and display mounts on opposite sides of the display device in accordance with an example embodiment.

[0013] FIG. 7 is a side view of a head-mounted display with display device mounted to a hat-type head-mounted support in accordance with an example embodiment.

[0014] FIG. 8A is a side partial cutaway view and FIG. 8B is a top view of a display device with a faceted device mount in accordance with an example embodiment.

DETAILED DESCRIPTION

[0015] In the following detailed description, reference is made to the accompanying figures, which form a part thereof. In the figures, similar symbols typically identify similar components, unless context dictates otherwise. The illustrative embodiments described in the detailed description and figures are not meant to be limiting. Other embodiments may be utilized, and other changes may be made, without departing from the spirit or scope of the subject matter presented herein. It will be readily understood that the aspects of the present disclosure, as generally described herein, and illustrated in the figures, can be arranged, substituted, combined, separated, and designed in a wide variety of different configurations, all of which are contemplated herein.

[0016] 1. Overview

[0017] A head-mounted display ("HMD") may enable its wearer to observe the wearer's real-world surroundings and also view a displayed image, such as a computer-generated image. In some cases, the displayed image may overlay a portion of the wearer's field of view of the real world. Thus, while the wearer of the HMD is going about his or her daily activities, such as walking, driving, exercising, etc., the wearer may be able to see a displayed image generated by the HMD at the same time that the wearer is looking out at his or her real-world surroundings.

[0018] The displayed image might include, for example, graphics, text, and/or video. The content of the displayed image could relate to any number of contexts, including but not limited to the wearer's current environment, an activity in which the wearer is currently engaged, the biometric status of the wearer, and any audio, video, or textual communications that have been directed to the wearer. The images displayed